



# FAME Status

---

**November 29, 2001**



# Outline



- **PDR Issues**
  - **7925-10 Spacecraft Design**
  - **CCD Procurement**
  - **Optics Development**
  - **Data Analysis Algorithm Development**
  - **Instrument Software Development**
- **Contract Status**
  - **LMMS - ATC**
- **Action Items/RFA**
  - **Updates to the baseline**



# 7925-10 Spacecraft Design



- **Completed Structural Design and Layout of Single 31" Propellant Tank**
  - **Electronics Deck Layout Complete**
  - **Mass Properties and Inertias meet requirements**
    - **No impact to ACS system**
  - **>20% Observatory Mass Growth available**
  - **Finite Element Model Analysis has been initiated**
    - **Results by end of CY01**
  - **Updated Thermal Analysis in Process**
- **No Observatory Cost Impacts for 7925-10 Design**
  - **Potential for reduced costs in Procurement of STAR-37 AKM**



# CCD Procurement



- **SITe Continues to Work FAME CCD Procurement**
  - **Allowing SITe to change Wafer material to improve yield**
    - **Slight Change in performance; meets Science Requirements**
- **Second CCD Source Procurement**
  - **Contract for Second CCD Source to be awarded by Dec 7th**
  - **Revised Spec/SOW Generated**
  - **Initial Proposals received from STA and Marconi**
  - **STA chosen (pending award)**
    - **Product closely matches FAME design**
    - **Initial Wafers (24) from foundry by end of March '02**
      - **Represents 96 potential devices**
      - **Front-Side Parts (2) by End of April**
      - **Back-Side Parts (2) by End of May**



# STA Recent Experience



## RECENT STA TECHNICAL PERFORMANCE

During the last two years STA has been successful fabricating several large area CCD focal plane arrays. The customers include Lockheed and JP L for three large area devices. Each was fabricated on 60 wafers at Zarlink (Mitel). All of these devices exhibited DC shorts yield in excess of 50% for a total of six lot runs.

CUSTOMER	CCD	APPLICATION	Contact
Lockheed Space Systems	30 micron 512x819 Backside thinned 500fps 14 outputs	Space Lightining Mapping	Earl Aamodt 650-4243280
Lockheed Management and Data Systems	15 micron 3k x4k 24 fps 16 outputs 40MHz per output	Cinematography Camera	Bill Hill 408-4736368
JP L	15 micron 4k x4k 1 fps 4 outputs 1Mhz max per output	Astronomy apps Low noise <2 elec	Dr Mark Wadsworth 818-3547833



# Optics Progress



- **Delta-PDR Conducted by Goodrich on November 27, 2001**
  - **Vibration issue with Compound mirror has been resolved with updated design**
    - **No relaxation in Vibration Requirements necessary**
- **Goodrich Schedule is being Maintained**
  - **Partial Shipment of Blanks have been received and are in inspection**
  - **Initial Shaping of Secondary Mirror and Fold Flat to begin Early December**
- **Communication between Goodrich Optics designers and Science Operations Team**
  - **Point Spread Function Centroiding Discussion**

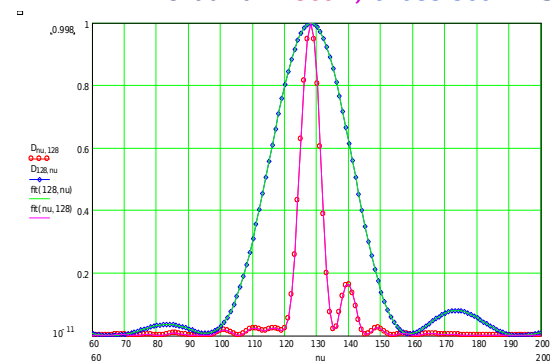


# Data Analysis Algorithm Development

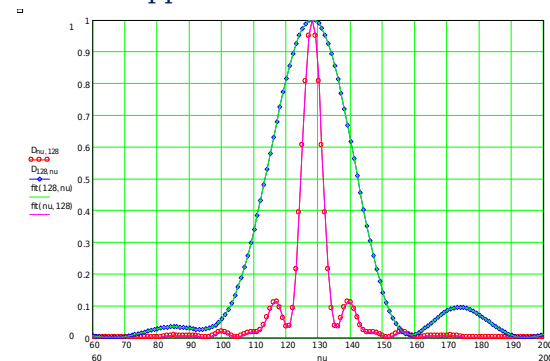


- Prototyping of all Data Analysis Pipeline Algorithms continues.
- Goodrich and Science Operations teams have made progress on centroiding issues (determination of stellar position).
- Previous efforts to reduce centroiding errors involved reduction of the rms wavefront error. Recent work indicates that controlling PSF asymmetry during optics fabrication may prove to be a superior method of mitigating centroiding errors.
- Near Term Activities:
  - Determination of how much asymmetry can be controlled during fabrication and operation
  - Determination of how much PSF asymmetry can be tolerated by data analysis pipeline centroiding algorithms

As built in-scan, cross scan PSF



As built in-scan, cross scan PSF.  
Fabrication asymmetry correction  
applied in-scan





# Instrument Software



- **Algorithm Implementation Continues**
- **Fame Attitude and Rate Determination**
  - Work in progress, draft algorithms available by 11/30.
- **Centroiding of Guide Stars for FAME**
  - Preliminary version complete, release pending
- **Concept for Generating Commands for CCD Charge Injection and CCD Readout**
  - Released but requires updates
- **Meetings between NRL/Lockheed during week of December 3rd to be held in Palo Alto.**





# Contract Status - LMMS ATC



- **Phase B Contract with LMMS-ATC was due to expire on November 30, 2001**
- **No-Cost Extension granted to December 31, 2001.**
  - **Results in reduced staff for month of December to continue Optics and CCD developments**
- **Decision to further extend contract must be made by December 7**



# Action Items/RFA



- **Action Items from PDR being worked**
- **Updates to Program Baseline Planned for Following:**
  - **Engineering Level EMI test with Engineering Model Focal Plane Assembly**
  - **Vibration Test of Instrument At Lockheed prior to Instrument TVAC**
  - **Eng. Model Controller to be verified during Instrument TVAC**
    - **In addition to previous compatibility tests**